EROS DATA CENTER, SIOUX FALLS, SD

EDC EDITION

U.S. GEOLOGICAL SURVEY, NATIONAL MAPPING DIVISION

Volume IV Number I Spring 1996

Pecora 13 Planning Remains Underway Despite Furlough

Despite nearly 4 weeks of lost planning time because of Federal Government shutdowns in November and December, Pecora 13 Symposium planners continue to prepare for the program. The Pecora 13 Symposium, centered on the theme ***Human Interactions with the Environment: Perspectives from Space***, will be held August 20-22, 1996 at the Ramkota Inn, Sioux Falls.

In keeping with this theme, the Pecora 13 Symposium will give the international remote sensing community a chance to exchange information on the ways remote sensing is being used to understand and evaluate the impacts of people on the Earth as well as human adjustments to environmental change.

Ron Beck, PBA, serves as the Conference Manager for Pecora 13. He's in charge of the daily planning for and operation of the conference. "The shutdowns have hurt us. We had trouble getting materials out to the audiences, and there's a great deal of concern about private sector and Federal travel budgets." What hasn't hurt the planning for Pecora 13 is use of the Internet. "We're using the Internet more strongly than print media for announcing Pecora 13, getting the word out quicker and cheaper to a wider audience," adds Beck.

In addition to Beck serving as Conference Manager, **Ray Byrnes**, U.S. Geological Survey, serves as Publicity Chairman; **Jim Merchant**, University of Nebraska-Lincoln, serves as Technical Chairman; and **Jess Brown**, SAB, heads the poster session. Representatives from various sponsoring agencies compose an Executive Committee: **Mike Mignogno**, NOAA; **Bill Belton**, U.S. Forest Service; **Don Garofalo** and **Denice Shaw**, EPA; and **Charlotte Griner**, NASA.

Continued on page 2

In Remembrance

Sablou Gabriel

Sablou Gabriel, secretary at the Alaska Field Office (AFO), died on January 2, 1996. Sablou who worked at the AFO since May 1990, began her career at the Ethiopian Mission to the United Nations in June 1967. After working in the travel industry in New York, she moved to Alaska to work at Alaska Pacific University. Before joining the AFO, she was Mediation Program Coordinator for the Alaska Youth and Parent Foundation. Her fight with cancer began last summer. She faced this disease with dignity and faith, always focused on what she must do to provide for the future of her two children. Her family knew her as a good daughter, a good sister, and a good mother. Her colleagues knew her as a friendly, hard-working woman with a smile, who made their jobs so much easier.

INSIDE

UP FRONT

Some seasons we celebrate, some we just enjoy, and some we seem to endure, thankful at the end that we survived. This past season was more like the last of these, as the weather and the dysfunctional aspects of the Federal Government piled up on people just trying to do their jobs.

The early, mild winter changed with a vengeance. The near record low temperatures, often coupled with howling winds, gave me another perspective on what the Native Americans in this region had been dealing with for many generations and on what the pioneers faced when they first established their communities here.

Then, recall the roller coaster ride we faced with the unprecedented shutdowns of the Federal Government. I am proud of the way you kept your spirits up and your dedication to the work at hand in spite of the budget wrangling at the national level.

All of that is moving behind us now as we enter the spring and summer months and begin an important new chapter in the history of the EROS Data Center.

A look at the schedule for the months ahead of us shows that we soon will be wrapping up the Landsat data conversion effort which we started more than 4 years ago. The National Landsat Archive Processing System (NLAPS) will be providing us with new capabilities to process and distribute Landsat products, and products from the declassified film archives will be available through the Center, allowing researchers access to Earth observation satellite data taken in the early 1960's. Also, our land cover characterization initiative is now being [endorsed and] promoted by the Federal Geographic Data Committee, chaired by Secretary Babbitt.

Key managers from the United Nations Environment Programme, the World Bank, NASA Headquarters and USGS Headquarters will be here to see the excellent work being done by Center staff. The NASA managers from the Mission to Planet Earth program will help us inaugurate a new era of scientific cooperation as we begin to move into the new addition. On April 20 we will throw open the doors to the entire Center, including the new addition, to you, your families and friends and the community, highlighting our commitment to science education. April 20 also is the nationally observed Earth Day.

Later this summer we will formally dedicate the new addition and we host Pecora 13.

Just like so many other Americans working in both the public and private sectors, we face an unusual amount of uncertainty regarding our programs and budget, especially as we start the national election process. One thing is for sure though it's going to get warmer! As I have often said before, brace yourself, it's going to be a challenging and exciting year.

Donald T. Lauer

Pecora 13
Continued from page 1

In addition to the Pecora 13 Planning Committee, **Dallas Peck**, U.S. Geological Survey, and **Roberta Miller**, CIESIN, have been named Honorary Co-Chairs for the symposium. Other people on the committe include: **Gary Johnson**, CIESIN, **Chris Johnnsen**, LARS/Purdue, **Bruce Quirk**, and **Arlys Johnson**, EDC.

Pecora 13 is co-sponsored by the U.S. Geological Survey, the National Aeronautics and Space Administration, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the U.S. Forest Service. As with the last Pecora Symposium, held in 1993, this year's symposium has secured the cooperation of the University of Nebraska-Lincoln, the American Society for Photogrammetry & Remote Sensing, CIESIN, UNEP/GRID, and other professional organizations.

Conference planners once again are encouraging presenters to use new media to get away from 35 mm slides and overheads when possible. "It's been a source of some frustration," explains Beck, "...that people do a lot of good work with electronic media and data processing systems, but present their work using a static viewgraph. We set aside some of our budget for renting display media. The Ramkota also has two excellent theaters for presentations."

The Pecora Symposia began in 1975 to honor the memory of **Dr. William T. Pecora**, former Director of the U.S. Geological Survey, Under Secretary of the Department of the Interior, and a pioneer in space-based remote sensing. During the past two decades, the previous 12 Pecora Symposia have addressed such major topics in remote sensing as sensor development, policy issues, data access and archiving, and uses of the technology.

As in the past, the Pecora 13 Symposium will give EDC employees another marvelous opportunity to showcase their world-class research in a series of technical sessions, plenary sessions, and open discussions. In addition, Pecora 13 will give EDC an opportunity to show off its new addition to the building. Abstracts for papers are due mid-March, with authors notified the first of May. If you have any suggestions to enhance this summer's symposium, please call Ron Beck (ext. 6551).

Building Addition Update

Progress on the 65,000-square-foot building addition, required to house equipment and people to support NASA's Earth Observing System program and other satellite data handling, remains on or ahead of the revised schedule. According to Dennis Hood, EDC Center Operations Manager, the addition contract was due to be completed by the end of February and the in-fill contract by March 15. "The office areas in the original contract are 99.9% complete. They have ceiling tile, lights, outlets, switches, floor covering, doors, and so on. It's moving along quite rapidly towards closure."

"All in all, it's going quite well. It's beginning to look a lot like finished space." – Dennis Hood

The Office of the Chief, the Science and Applications Branch, and the Satellite Data Systems Branch apparently will be the first to call the new addition home in late March. "We are choosing to wait to occupy space until the contractor is completely out of it," explains Hood, "...and we can do a final inspection, note any discrepancies, and have them corrected."

While work winds down on the main level, construction on the lower level and in the penthouse of the new addition also is nearing completion. "There's a huge amount of plumbing associated with heating, ventilation, and air conditioning; miles of heavy pipes much of which must be wrapped with insulation. That's nearly done," says Hood.

A subcontractor hired by Gil Haugan Construction installs a lighting grid in the new addition in January.

"I've been very pleased by the cooperative nature of the Branch of Contracts in Denver, specifically Contracting Officer **Teresa Henninger**, and **Gil Haugan Construction** in accommodating all requirements with a minimum of fuss in meeting all of their production deadlines and contractual obligations."

To get an idea how smoothly this contract has operated, it's interesting to examine two comparable projects to the EDC addition involving hospitals in Sioux Falls and Miles City, Montana. According to Hood, "Like the EDC project, these construction projects were complex in that they had stringent clean air requirements, raised floor requirements, and similar power needs. Each of those contracts had more than 200 change orders. To date, we have only 60. You can directly credit Gil Haugan Construction and Spitznagel (the architect). They have just been very responsive and wonderful to work with."

An open house for family, friends, and the public is scheduled for Saturday, April 20. A formal dedication ceremony for the new addition will be held in conjunction with the Pecora 13 Symposium August 20-22, 1996.

The EDC Addition: Inside the Numbers

excavation and fill total
- 127,500 cubic yards

concrete for footings,pads, etc.
- 13,900 cubic feet

concrete slab
- 137,500 square feet

steel rebar
- 57.25 tons

wire mesh
- 94,500 square feet

fiberglass insulation
- 21,776 square feet

structural steel
- 581 tons

EDC Honored for Diversity

The EROS Data Center places a high value on integrating people of diverse backgrounds into its workforce. Because of this policy, the United States Geological Survey and Hughes STX Corporation received the 1996 OUTSTANDING EMPLOYER AWARD for businesses with more than 200 employees from the South Dakota Governor's Advisory Committee on Employment of People with Disabilities March 5 in Pierre.

According to **Roger Van Noort**, HSTX Center Services Manager, the award can be attributed to a vision by **Jim Sturdevant**, EDC Assistant Chief of Operations. Sturdevant initiated an idea to investigate the possibility of work opportunities for developmentally delayed employees at the EDC. Jim came to me and said the EDC was looking at hiring some people with special needs. When he asked if I was interested, I said yes because I thought we had a great opportunity to bring someone out here and make a good fit."

While eager to participate in the program, Van Noort also had some reservations. He remembered the challenges and negative public perceptions that faced his brother with Downs Syndrome. "It was my concern to be protective. I remember watching my brother being shunned 30 years ago, when society thought that these people belonged in institutions. Now it's wonderful to see the mind set change to put people in opportunities to work rather than in institutions."

The EDC and HSTX have worked with Sioux Vocational Services the last year to provide people with learning difficulties employment opportunities and independence. **Brandi Wahl**, a 19 year old Fulton, SD native, was hired last summer to support EDC's copy room. Wahl is very warm and receptive. She's got a great sense of humor and is known to kid around. The former Special Olympics gold medal gymnast exhibits the same dedication

Continued on page 10

Map Design and Production for the Utah Gap Analysis Project

by John Hutchinson

"Cartographic preparation and printing" are words chosen to describe the U.S. Geological Survey's (USGS) role in the 1995 publication of four maps of Utah in support of the Gap Analysis Program. This short phrase covers a wide range of issues and problems in map design and production (and even a little politics) that had to be addressed during the course of the project. In this article, I'd like to briefly describe the mapping process and examine one issue to illustrate the challenges of making maps from image data.

> *"This is a new way for the USGS to produce image maps. The ultimate goal is to produce, by all-digital means, image maps of the same high-quality expected of USGS products." – John Hutchinson*

Gap Analysis in a Nutshell

The Gap Analysis Program (GAP) is a nationwide program of the National Biological Service (NBS). The goal of GAP is to preserve natural communities and ecosystems as a way of protecting species habitats. GAP looks for overlapping habitats that host many species, not just endangered ones. Instead of waiting until a species is threatened with extinction, GAP seeks to take protective measures early, when it's cheaper and there's a better chance of success.

In the Utah Gap project, the objective was to produce a package with a printed report, a set of four maps, and a CD-ROM of data that could be widely distributed to schools and policy makers and used as a model by the other Gap states. The tasks involved in producing the maps were divided among three sites: image processing and data analysis at the NBS research unit and the College of Natural Resources at Utah State University at Logan, Utah; map design and production at the USGS in Reston, Virginia; and EDC as a focal point between the two to assemble the map layers, produce draft layouts and coordinate review and comment.

The Mapping Process

Many past USGS image maps were produced by scanning 9-inch film transparencies produced at the EDC. Scanning was done by a commercial firm, which sent the resulting color separation files to Reston. This workflow allowed EDC to work with familiar RGB images, image processing software, and 9-inch film output. Reston personnel could work with familiar CMYK images, pre-press software, and halftone-printed output. The result has been a series of high-quality image maps, but neither side of the processing flow knew much about the other, even in recent projects where digital data replaced film as the medium of exchange.

In the Utah Gap project, we augmented the workflow with commercially-available desktop publishing software on a Macintosh. Instead of making a 9-inch film transparency for scanning, the digital image data were loaded into Adobe Photoshop for contrast stretch and other enhancements. The lat/long and UTM grids were created in Arc/Info, then loaded into Adobe Illustrator, where the rest of the map legend and marginilia were assembled; before, these had been created by manual methods. The image, cartographic overlays, and map collar were all brought together on the Macintosh.

However, for an all-digital workflow to work smoothly, the EDC will need to be more familiar with printing, and Reston will have to be more familiar with image processing, because there won't be any boundary between the two. The Reston map production folks with whom I work are, in fact, anxious to visit EROS and see what we do.

"It's too funereal"

In an all-digital process that passed the image through three different processing environments (Unix workstation, Macintosh, and Scitex color workstation), there were many opportunities for errors and color distortion to creep in, even for experienced personnel. Our inexperience with the new processing flow guaranteed a fair amount of trial and error.

The first version of the image map produced on the Macintosh was generally washed out and had a pronounced color cast ("It's too green"). Contrast and color balance were both improved on the second version, also produced on the Macintosh, but now the color balance tilted too much toward the reds ("It's too cheerful"). The third version was done on the Scitex workstation, with a much improved color balance. However, the new black plate was heavy and dark ("It's too funereal").

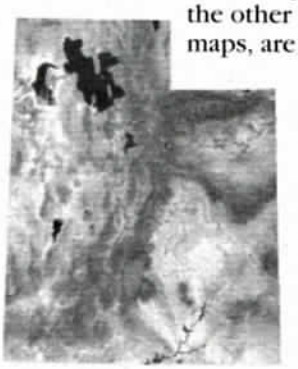
Finally, for the fourth and final version, we went back to the original RGB image and did a simple conversion to CMYK, with Cyan=255 minus Red,

Overview of the Four 1:750,000-scale Maps

1. Satellite Image Map	mosaic of 23 Thematic Mapper images bands 7,4,2 natural color composite
2. Vegetation Cover Types	classification of TM imagery
3. Land Ownership and Administration	digitized from 1:100,000-scale BLM Surface Management Status maps
4. Biodiversity Management Status	combines vegetation cover types with protection status within each land

Magenta=255 minus Green, Yellow=255 minus Blue, and Black=Minimum of CMY. This base image was stretched and sharpened on the Scitex, and the black plate was lightened photographically by press room staff to produce the final map. It's still dark, but within acceptable limits.

Image-based thematic maps, such as the other three Gap maps, are much easier to create, because the data consist of a one-band image with a color look-up table. For most such maps, there are no more than 20 or so discrete colors, and they can be chosen off a color chart. The colors in the look-up table are applied to the pixel values of the image in a straightforward way to produce the map.



Grayscale version of TM image of Utah.

With a three-band image, there are thousands if not millions of colors represented on the map, and producing an accurate rendition requires a thorough understanding of data characteristics, the film plotter, the printing press, and the software and photographic tools available at every step along the way. By comparison, printing thematic maps from one-band images is a problem that has been solved. There's still lots to do on three-band images.

Next steps

By the time the fourth Utah Gap map came around, it only took about 3 months to produce from start to finish. A subsequent project, Ecoregions of Alaska, took just 4 months to produce, from design concept to maps rolling off the press, so we must be getting the hang of it. Other mapping projects now underway include an image map of Senegal, ecoregions maps of several States, and possibly more Gap-type maps of Federal lands. The strategy developed for the Utah maps will be further refined and improved in these new products.

One critical improvement will be to calibrate the Macintosh display both to a proofing device and to final offset-printed output. On the Utah image map, the appearance of the TM image on the display bore only a distant resemblance to its appearance on the press, so any enhancements or color corrections made on the Macintosh were a shot in the dark. Calibration is now fairly easy with new colorimeters and software on the market. It's the essential first step to develop techniques such as contrast stretch, color correction, sharpening, and RGB-to-CMYK conversion, with confidence that the image on screen will look about the same when it's printed. Future investigations will also include direct-to-plate imaging and limited-run printing technology.

Delivering EDC's Data and Information

by John Faundeen

EDC Senior Management first discussed the concept of a Data and Information Delivery Technical Liaison position in the spring of 1995. From those discussions a mission evolved to ease and expand communication channels between the EDC and the National Mapping Division (NMD). With the departure of **Al Watkins** and **Cliff Greve** from the NMD, the EDC recognized the long-standing need to do a better job of educating the NMD, so our activities and interests are not misunderstood or forgotten.

John Faundeen

While ***Mission to Planet Earth*** projects such as Landsat-7, North American Land Characterization, Humid Tropical Forest, Topo, and 1-km are examples of EDC activities that need liaison support, my principal responsibilities revolve around the EDC's National Satellite Land Remote Sensing Data Archive activities and our unique support of Data and Information Delivery activities involving GLIS, DORRAN, and the NDCDB Sales Data Base.

My office is in the NMD's Data and Information Delivery group, led by **Hedy Rossmeissl**. Because coordination with EDC programs, products, and information systems already flows through this office, my location within this organization can improve the quantity and quality of information already in place.

From a more personal side, my new duties were scheduled to begin January 2. The Government furlough idled me for a week. With a continuing resolution in place, I looked forward to starting work January 8. Twenty-four inches of snow got in my way. So, during the 4th-largest storm ever to hit the D.C. area, many folks accused me of bringing a little bit of South Dakota with me. I accused them of trying to make me feel at home and said that 2 inches would have been sufficient. Finally, my new responsibilities began on January 11. Of course, having worked an entire day in a month, a break was needed and took the form of an additional 8 inches of snow on January 12 coupled with the Martin Luther King, Jr. holiday the next Monday. Since then, my office has become EDC-ed with materials representing our one-of-a-kind facility.

For those who are "concerned," I have yet to be lost in the maze of angled hallways. Possibly confused, though! I am looking forward to the challenge of representing all of the diverse projects that the EDC is affiliated with and encourage you to communicate with me information that can benefit my mission. My office is 2B-312B any my e-mail is jfaundee@usgs.gov or Vines.

Employee News

The Governor's Advisory Committee on Employment of People with Disabilities selected the **EROS Data Center** and **Hughes STX Corporation** for the 1996 OUTSTANDING EMPLOYER AWARD - OVER 200 EMPLOYEES. The EDC and HSTX were nominated by Amy Hoekstra and Carla Alexander of Sioux Vocational Services for the opportunities EROS provides workers such as **Erik Osvog** and **Brandi Wahl**. Representatives from the USGS and HSTX attended a luncheon March 5, 1996 at the Ramkota River Center in Pierre to receive the award.

USGS

Former merit pay employees receiving performance awards were: **Wayne Miller** (quality step increase) PBA; **Dave Ochsner** (quality step increase) CSB; **R. J. Thompson** (cash award) SDSO; and **Jim Sturdevant** (cash award) OC.

Gene Napier received a performance award for work for PBA at NMD Headquarters.

HSTX

Sam Nath – Sam joins the EDC as a programmer analyst with the Information Systems Development section. His duties include writing programs for the Global Land Information System (GLIS). Sam earned a BS in math and computer science from Montclair State University, Montclair, New Jersey (1990). Before joining the EDC, Nath worked for IBM, Rochester, MN. Originally from Calcutta, India, Sam lives in Sioux Falls with his wife, Bula, and daughter, Lopa.

Leila Stabbe – Leila comes to the EDC from Micro Medical Systems Inc. in Sioux Falls, where she served as a software engineer. Stabbe serves as a senior database specialist for Data Management at the EDC. Stabbe received a BS in management information systems (1994) from Iowa State University. In addition to working at Micro Medical Systems in Sioux Falls, Stabbe's work experience includes work as a programmer for the Administrative Data Processing Center at Iowa State. Stabbe grew up in Lyons, SD, and now lives in Sioux Falls.

Da Kuang – Da joins the Science Department to study geometric modeling requirements and develop mathematic formulae for the Image Assessment System. Kuang's academic background includes a BS in Surveying/Engineering from the Jiangxi Institute of Metallurgical Technology in China (1982), an MS in geophysics from the Institute of Seismology, State Seismological Bureau of China (1986), and a PhD in aerospace engineering from The University of Texas (1995). Kuang worked in China for several years in mining, surveying, and earthquake studies. He also worked 6 years at the University of Texas Center for Space Research as a Research Scientist/Engineer Assistant. Da's wife is a software engineer. The Kuangs have a 14-month-old daughter.

Geneva Kluck – The EDC welcomed back a familiar face when Geneva joined the Science Department to support the data entry needs of the Senegal Ecological Monitoring Project. In her new part-time data entry position, Geneva will work an average of 2 days a week. She retired August 1, 1995, after 23 years primarily in Data Management, at the EDC.

Debra Anderson – Debra is the newest member of the EDC Help Desk team. Before joining the EDC Help Desk group, Deb worked at First Bank of South Dakota for 8 years, where she served as system administrator for the phone and phonemail system and provided computer hardware and software support. Deb and her husband, Dan, enjoy hunting and fishing, two outdoor activities they hope their 2-year-old son, Dylan, experiences in the future.

Amy Vander Vorste – Amy joins Software Engineering to support projects using the LAS/ADAPS software. A December 1995 graduate of the South Dakota School of Mines and Technology in mathematics, Vander Vorste worked for the Institute of Atmospheric Sciences at the SDSM&T. During her academic program, Amy gained valuable experience working with Landsat and AVHRR data. Amy's interests include Spanish, teaching English as a second language, guitar, gardening, and crocheting. She and her husband, Mike, live in Sioux Falls.

Paul Jensen – Paul started work as a computer operator on Monday, December 18. After 4 hours on the job, Jensen took a 3-week break with the rest of us because of the Government shutdown. Originally from Sioux Falls, Paul earned a degree in computer science from Augustana College. After college he moved to Maryland, where he worked for government contractors performing software support activities for the Patuxent Naval Air Station. Paul's many duties included software development, independent validation and verification, test and evaluation of documentation. Jensen's hobbies include snow and water skiing, scuba diving, and hunting and fishing.

John Lewis – The Science Department welcomes back John from McGill University in Montreal, Canada. Lewis returns to EROS for a year after a leave of absence from his academic duties. During his stay, John will mainly work on the Famine Early Warning System and will contribute to the Senegal and SPOT-Vegetation projects. Lewis received his PhD from the University of Illinois. After teaching at the University of Maryland he joined McGill, where he has been a professor in the Geography Department since 1975. All in all, Lewis has researched and taught climatology, remote sensing, image processing, and geographic information systems for 25 years. John's wife, Jeannine, is an educational math consultant. The rest of the Lewis clan lives throughout North America and Europe.

Manuel Suarez – Manuel joins the Science Department to support the Image Assessment System through geometric modeling. Manuel earned a B.S. in Aerospace Engineering at Iowa State University (1993), with undergraduate research in interplanetary astrodynamics, and a MS in aerospace engineering science from the University of Colorado-Boulder (1995), with an emphasis in remote sensing. Suarez enjoys home recording (song writing, guitar, bass), and soccer, frisbee, basketball, and hockey.

Cynthia Egger – Cynthia joins Data Management, where she works with archive activities. Egger recently completed an Office Operations course at SDSU. Cynthia lives in Sioux Falls, where she and her husband enjoy riding bikes, taking walks along the bike path, and her family (two daughters, two sons, two granddaughters, and two grandsons).

Michelle Anthony – Michelle joins the Science Department, where she will continue to develop software to support the Famine Early Warning System. Anthony comes to the Science Department from Software Development in the CSB, where she served as programming team leader for the International Program for 2 years. Michelle earned a BS degree in computer information systems and business administration at Dakota State University. In her leisure time, Michelle enjoys volleyball and recreation at Iowa's Great Lake region, mainly Okoboji.

UNEP/GRID

Linda Black – Linda works for the GRID office as an Information Scientist. She is a recent graduate of Dakota State University with a BS in English for information systems. As an undergraduate student at DSU, Black developed a web site for the State of South Dakota. You can check out much of her work in this area at the following URL: (http://www.state.sd.us/). Away from the office, Linda enjoys snow skiing, canoeing, riding horses, and spending time with family and friends.

VESCO

Dave Tuschen – Dave joins VESCO as an apprentice electrician. Tuschen will perform a variety of electrical jobs including telephone troubleshooting. Originally from Salem, SD, Tuschen likes to golf, hunt, and fish while spending time with his wife, two sons, and daughter.

Do You Hear What I Hear? Understanding Deaf Culture

Carefully place your index fingers in your hears. Not too far, you don't want to disrupt grey matter or air pressure. Listen, and you'll hear what **Cherie Bernard** and other deaf people hear. Many people who can hear often forget that deaf people can do anything other people can do...except hear. Bernard proved it the summer of 1994 as she represented the State of South Dakota at the Miss Deaf America Pageant in Knoxville, TN.

Cherie Bernard

Cherie Bernard is originally from Aberdeen, SD. Before the age of 3, she developed spinal meningitis (inflammation of the membranes investing the brain and spinal cord), which caused her to lose her hearing. She always dreamed of becoming an actress. Instead she performs in a real-life, swingshift, production called the "EDC Photo Lab." Bernard earned a BA degree in TV, film, and photography from Gallaudet University in Washington, DC in May 1994. Since her career path changed from acting, Bernard stayed with the picture business by printing black and white and color pictures in the EROS Photo Lab.

Deaf culture is a way of life. It is developed and communicated by people such as Cherie who can't hear. Like other cultures, the deaf culture consists of ideas, habits, attitudes, customs, and traditions While deaf people are unique, they have more commonalities with people that hear than dissimilarities. For instance, Bernard's major source of satisfaction is performing well on the job. According to Bernard, the biggest misconception people have about the deaf is that deaf people can do everything other people can do, with the exception of hearing. "People should try to be more understanding and try to communicate better to understand deaf culture."

A good way to understand and communicate better with deaf people is through openness and empathy. Put yourself in the shoes of a deaf person Put your index fingers in your ears. Other recommendations:

- Don't judge what you don't understand.
- Don't try to "fix" anything unless it is clear that you have been asked to do so.
- Apologize if you misinterpret or send the wrong message. While mistakes can be costly, some measure of recovery is possible.
- Advise those whom you see making such mistakes.

While Bernard admits her biggest difficulty growing up involved communicating with people who hear, this is nothing new. There are many hearing people who miscommunicate with other people who can hear. Teenagers and parents, supervisors and subordinates, and married people voice this complaint continually.

If there is one thing Bernard would like to change about her job at EROS overnight, it would be a day shift position, which would be nice when she gets married in June. By the way, you can take your fingers out of your ears.

Linda Block *(left) communicates with fellow Photo Lab employee* ***Cherie Bernard*** *through sign language.*

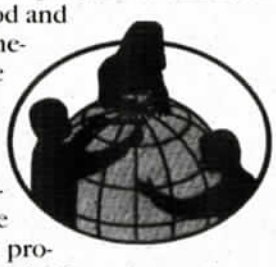
EROSDATA is published quarterly for EDC employees. The success of this publication depends on your input. EROSDATA coordinators welcome your comments and ideas for future issues.

EROS Data Center
U.S. Geological Survey
Sioux Falls, South Dakota 57198
(605) 594-6176

EDC Supports GLOBE Program

K-12 Students Receive Down-to-Earth Help in Science and Mathematics

More than 2,000 schools nationwide are receiving down-to-earth help in science and math from the EDC. EROS remote sensing scientists are reaching out to students and teachers around the world through a hands-on, school-based program that serves the public good and advances mathematics and the Earth sciences. This new international environmental science and education program, called Global Learning and Observations to Benefit the Environment (GLOBE), joins students, educators, and scientists in a worldwide network to study and understand the global environment.



Gore's GLOBE

The GLOBE program was announced by Vice President Al Gore on Earth Day, April 22, 1994. Since then, more than 100 nations have expressed interest in joining the United States in this exciting new venture. GLOBE began operating on the 25th Earth Day, April 22, 1995, as schools across the U.S. and throughout the world were invited to join. GLOBE is a worldwide network of students who work under the guidance of GLOBE-trained teachers to make environmental observations at or near their schools. Once students collect environmental data at or near their schools, they report it to a GLOBE processing facility. As a result of this program, students can tap into and use global images created from their data to study environmental topics in their classrooms. Data collected by students also will be used worldwide by environmental scientists in their research to improve our understanding of the global environment. The program operates from an office in Washington, D.C., funded by the Department of Commerce and NASA. Other Federal agencies making key contributions include the National Science Foundation, the Environmental Protection Agency, and the Departments of Education and State. GLOBE leadership also includes the White House Office on Environmental Policy and the Office of Science and Technology Policy.

EROS Reaches Out

EROS became a participant in the GLOBE Program when it received funds in 1995 to assemble a test CD-ROM data set for 120 schools nationwide. The EDC will receive additional funds from GLOBE in 1996 to produce more data sets and distribute them to 1,900 other schools in the program. According to **Doug Binnie**, an EDC contact for GLOBE products, the EDC provides data and expertise that help GLOBE define remotely sensed imagery data sets that ultimately will aid all students achieve higher science and math scores. "The initial data set included a tailored thematic mapper image over each school site," explained Binnie. "Also included in the CD-ROM data set were advanced very high resolution Radiometer (AVHRR) products of the conterminous United States. This gave students four separate images showing vegetation greenness, each covering a different 2-week period through the summer months so they could see how vegetation near their schools changed through the season." The EDC supplied students with an AVHRR companion data set including state and county boundaries, ecoregions, land resource areas, digital terrain data, hydrologic boundaries, and climatic divisions that can be used with the AVHRR data.

***Barb Hubbling**, Digital Data Production, accesses the MultiSpec Software K-12 students use to process remotely sensed images associated with GLOBE.*

In addition to Binnie, several other EDC employees are involved with developing data sets for GLOBE. Once schools receive real-world remotely sensed data, they have to be able to read the data and do something with it. That's where **Kevin Lowell** contributes. The Purdue University graduate continues to work as a technical advisor with his alma mater to develop and refine Apple Macintosh-based image processing software being distributed to GLOBE schools. According to Lowell, all Purdue students who study image processing in the Electrical Engineering Department work on the MultiSpec software. "MultiSpec is free software offered by Purdue University, which is a simple image processing package with good features. It is very simple for grade school, junior high, and high school students to use."

Kevin Lowell

Continued on page 10

GLOBE Project
Continued from page 9

While on vacation in October of 1995, Lowell visited Fowler Elementary School in Fowler, IN, one of 120 schools nationwide to receive GLOBE test data. According to Lowell, as long as he was in the area, he wanted to stop at Fowler to get some feedback. "I sat down and discussed with the science teacher that works with the children, her perceptions of the product, how satisfied she is with the GLOBE training, how comfortable she is using the MultiSpec software, and what problems she thinks her students may encounter."

Another employee contributing to EDC support of the GLOBE program is **John Hutchinson**. Because of his cartographic knowledge and experience working with Macintosh technology, Hutchinson has been able to look at the data sets, see how the Mac reacts with MultiSpec and recommend what needs to be done to make the software easier to use. "I ran the software through some test data provided by our (EDC) Data Production Branch and evaluated it based on how easy it is to load an image, display an image on the screen, and get into basic functions. As a result, the software developer added input modules to the software so students will not have to reformat data as much, which is useful for people teaching others how to use it."

In addition to Lowell and Hutchinson, Binnie credits EDC digital data production staff, such as **Barb Hubbling**, with producing the data sets. "They pull down an entire image, and then after identifying the latitude and longitude of school area, select a part of the scene directly over each participating school." According to Binnie, the challenge for the EDC is not developing and supplying data sets, it is matching the wide range of expertise available in schools nationwide. "Some schools have rudimentary PC experience while others have been using Macintosh technology for a long time. Experimental users know the software and are ready to use all the data sets we can give them. We can give many schools much more data than they need right away, but it will allow them to grow in the future."

Math and Science Beneficiaries

The GLOBE program benefits the disciplines of mathematics and sciences as well as their practitioners. For instance, students benefit from the GLOBE program by conducting an array of measurements and observations at their schools. Through this work, students are able to share data via the Internet with other students and scientists worldwide in an effort to work with real-world math and science information to get a better environmental picture of the planet.

GLOBE helps teachers instruct students on math and science issues and understand the significance of repetitive global visualizations. Scientists benefit by reaching out to help students develop a better understanding of the disciplines of math and science. The EDC comes out ahead by getting its data into the hands of people who will use them in the future. In essence, the EDC is helping to train future hydrologists, geologists, and cartographers, who one day could continue its mission of earth science in the public service. Just as important, the EDC is increasing awareness and appreciation of science among people worldwide.

The disciplines of math and science benefit from the GLOBE program because teams that cross discipline boundaries are greater than the sum of their parts. When talented students, teachers, and scientists work together and apply their creative energies to study the global environment, good things happen for the public good and for future generations of mathematicians and earth scientists. Additional information is available through the Internet at the GLOBE home page: **http://www.globe.gov/http.**

Diversity
Continued from page 3

and drive in the copy room as she did while competing in the floor exercise. "I was kind of scared the first time I came out here," said Wahl, "but everybody was great. I didn't know if they would treat me the way they treat everybody else. I have a handicap but that comes natural to me. I grew up with that and I just hoped that they would treat me like any other human being. They gave me a lot of support and help and I couldn't ask for better."

Productivity in the workplace is often the result of teamwork. The success of Brandi Wahl and future developmentally delayed employees teeters on group support. "Everybody who works with Brandi in Center Services and throughout the EDC has been so supportive," says Van Noort. "Initially I was worried how the rest of my staff would work with and receive these people. After discussing the situation openly and sharing some of my fears, they jumped in and really made an effort to make her belong and succeed."

The relationship between Sioux Vocational Services and the EDC stipulates that if the employer is not satisfied with the program or the person they suggest, the employer maintains all rights to change or stop the work opportunity. "Our relationship with Sioux Vocational, through Hughes STX, is an important part of our total human resources program, which includes Equal Employment Opportunity awareness, cultural diversity, the Federal Women's Program, health awareness programs, and career development opportunities," said Sturdevant. "We plan to continue our relationship with Sioux Vocational as long as it benefits both parties and the employees involved. The relationship has worked extremely well, and we expect this level of success to continue."

To help ease Brandi's assimilation into the EDC culture and job, a job coach is available on site up to 18 months. "The job coach is critical to the success of the program," explained Van Noort. "Job coaches break the job into understandable increments so Brandi

can understand what has to be done. They also know when the time is appropriate to fade out of the picture and let the person become more independent." Because of health concerns, Wahl can only work three days a week. Yet, only 7 months into the program, Brandi's job coach is starting to fade away.

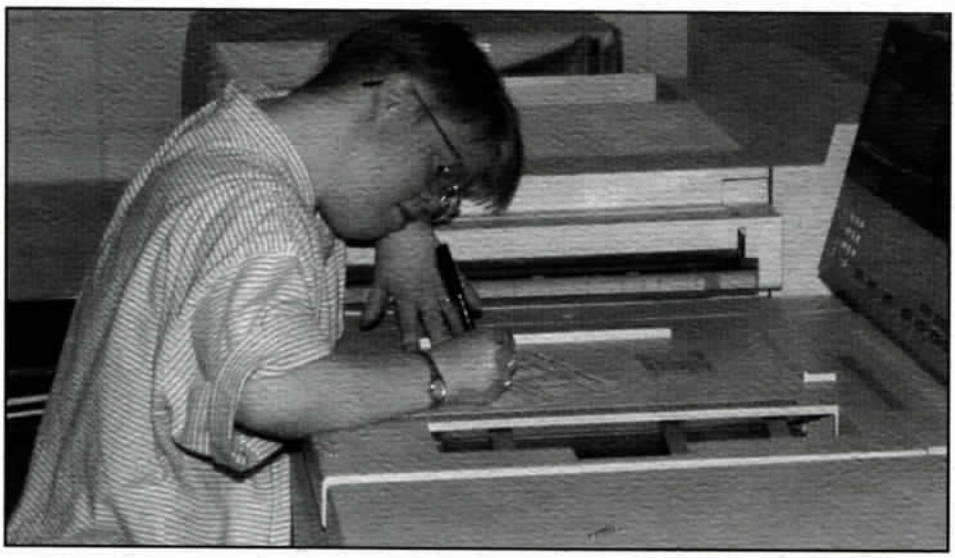
Wahl's job responsibilities include reading a work order, determining what is needed by the customer, then binding, cutting, collating, or copying documents submitted by EDC staff. She does whatever anyone else has had to do in the EDC copy room, including ordering supplies. "She loves her job," says Van Noort. "The day when she received her first check she said, 'Roger, this is way too much money!' "No other employee I have has ever said that," said Van Noort with a grin. "It's just more than I could ever ask for," said Wahl with a huge smile. "Out here just makes me feel like I can do a lot more with my disability. I love working in the copy room. I love the people. And, I love the money."

The EDC and HSTX were nominated for the award by **Carla Alexander** and **Amy Hoekstra** of Sioux Vocational Services. "Carla and I nominated EROS and Hughes STX because we felt they were very supportive of the special needs of our clients," explained Hoekstra. "For example, EROS and HSTX were willing to allow Brandi longer breaks for oxygen (Wahl requires oxygen for a serious health condition) and build a platform to accommodate her short stature when working with photocopy equipment."

Roger Van Noort

Jim Sturdevant

Van Noort and other USGS officials represented the EDC at a Governor's luncheon held in honor of each award recipient March 5, 1996 in Pierre, SD. An award such as this means the USGS and HSTX have done an effective job in supporting their community and promoting diversity in the workplace. "Diversity includes persons with disabilities, as well as sex, race, religion, color, age, and national origin," explained Sturdevant. "The highest managers in the Department of the Interior and U.S. Geological Survey enforce commitment and accountability at all levels for developing a workforce representative of the diversity in the general population." Workplace diversity is something the U.S. Geological Survey and HSTX can both point to with pride.



Brandi Wahl *completes another job in the EDC Copy Center.*

Upcoming Events

April 19-20, 1996
- Visit by **Wendy Budd**, Acting Associate Division Chief, Program and Finances

April 20, 1996
- EDC Earth Day\Open House Celebration

August 20-22, 1996
- Pecora 13 Symposium, Best Western Ramkota Inn, Sioux Falls

June 10, 1996
- Visit by **Jacques Mouysett**, President and CEO of SPOT Image, Toulouse, France and **Ted Nanz**, President of SPOT Image, Reston, VA.

Editor: Mark Barber

Content Editors: Gene Napier, David Terrell

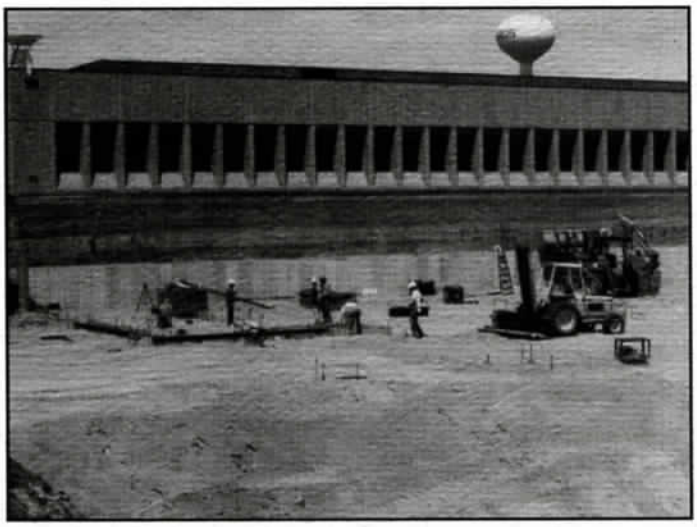
Graphic Artist: Jan Nelson

Creative Director: Lee McManus

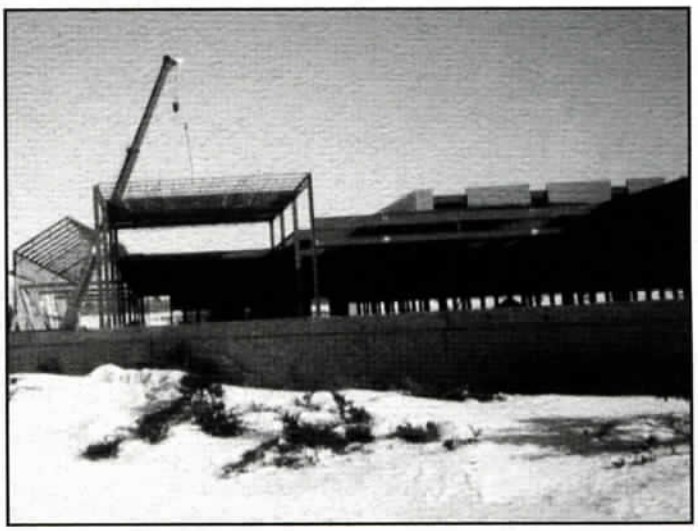
Contributors: Don Lauer, Ron Beck, Dennis Hood, John Hutchinson, Cherie Bernard, Kevin Lowell, Brandi Wahl, Roger Van Noort

Photographers: Max Borchardt, Mike Austad, Wendell DeGeus, Denny Pearson

Get Ready – EDC Open House, April 20, 1996



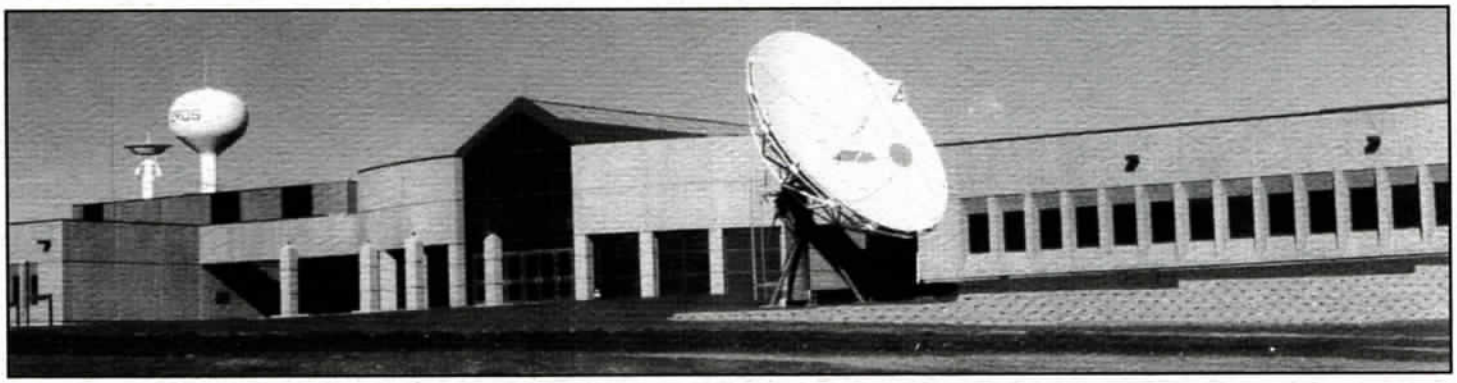
August 1994



March 1995

July 1995

September 1995



January 1996